CLAIMS

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A pipettor head, comprising:

(a) a body;

(b) one or more solenoid valves disposed in said body;

(c) each said one or more solenoid valves having an outlet at a lower end and an inlet at an upper end;

(d) each said one or more solenoid valves having said outlet attached to a dispensing passageway;

(e) each said one or more solenoid valves having said inlet attached to a standpipe; and

(f) said standpipe having an open top communicating with an interior of a closed vacuum/pressure chamber defined in said pipettor head, said closed vacuum/pressure chamber being arranged such that vacuum or pressure may be selectively applied to said closed vacuum/pressure chamber.

2. A pipettor head, as defined in Claim 1, wherein: said one or more solenoid valves comprise at least two valves each connected to a standpipe and said standpipes are arranged such that overflow from one said standpipe cannot enter another said standpipe.

3. A pipettor head, as defined in Claim 1, wherein: said dispensing passageway terminates at its distal end in an orifice having a diameter smaller than said dispensing passageway.

4. A pipettor head, as defined in Claim 2, wherein: said orifice has a diameter from about 0.003 to about 0.004-inch.

5. A pipettor head, as defined in Claim 1, wherein: pressure above atmospheric pressure is applied to said vacuum/pressure chamber to assist in dispensing liquid from said standpipe.

6. A pipettor head, as defined in Claim 1, wherein: a vacuum below atmospheric pressure is applied to said vacuum/pressure chamber to assist in aspirating liquid from said standpipe.

7. A pipettor head, as defined in Claim 6, wherein: a higher vacuum, *i.e.*, lower negative pressure, than is used to assist in aspirating is applied to said vacuum/pressure chamber to assist in washing said orifice, said dispensing passageway, said solenoid valve, said standpipe, and any interconnecting passageways.

8. A method of using a pipettor head, comprising: providing said pipettor head having: a body; one or more solenoid valves disposed in said body; each said one or more solenoid valves having an outlet at a lower end and an inlet at an upper end; each said one or more solenoid valves having said outlet attached to a dispensing passageway; each said one or more solenoid valves having said inlet attached to a standpipe; and said standpipe having an open top communicating with an interior of a closed vacuum/pressure chamber defined in said pipettor head, said closed vacuum/pressure chamber being arranged such that vacuum or pressure may be selectively applied to said closed vacuum/pressure chamber; said method comprising: applying pressure to said vacuum/pressure chamber to assist in dispensing liquid from said standpipe or applying vacuum to assist in filling said standpipe.

9. A method of using a pipettor head, as defined in Claim 8, further comprising: providing said one or more solenoid valves comprising at least two valves each connected to a standpipe and said standpipes are arranged such that overflow from one said standpipe cannot enter another said standpipe.

10. A method of using a pipettor head, as defined in Claim 8, further comprising: providing said dispensing passageway terminating at its distal end in an orifice having a diameter smaller than said dispensing passageway.

11. A method of using a pipettor head, as defined in Claim 10, further comprising: providing said orifice having a diameter from about 0.003 to about 0.004-inch.

12. A method of using a pipettor head, as defined in Claim 8, further comprising: applying pressure above atmospheric pressure to said vacuum/pressure chamber to assist in dispensing liquid from said standpipe.

13. A method of using a pipettor head, as defined in Claim 8, further comprising applying vacuum below atmospheric pressure to said vacuum/pressure chamber to assist in aspirating liquid to fill said standpipe.

14. A method of using a pipettor head, as defined in Claim 8, further comprising: applying vacuum to said vacuum/pressure chamber to assist in washing, in order, said orifice, said dispensing passageway, said solenoid valve, and said standpipe.